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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,997	03/02/2004	Yuichi Seki	03500.018013.	9683

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EXAMINER	
PHAM, HAI CHI	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,997	SEKI ET AL.	
	Examiner	Art Unit	
	Hai C. Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4 and 10-15 is/are rejected.

7)☒ Claim(s) 5-9 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 02 March 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 10/20/04, 11/09/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 25 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim13 is objected to because of the following informalities:

- Line 3, "the holding device" should read --the variable-magnification coefficient value generating device--, to preserve the consistency of the claimed terminology as well as to add clarity.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. The following claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10:

- The following limitation "a reference value used as a variable-magnification coefficient" at line 7 appears to be ambiguous in that it is not known whether the "reference value" stored in the reference value storing device recited in claim 1 is the same reference value being recited in claim 10.

Claim 15:

- Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete because the existing recited method steps are only directed to the detection the difference between the laser irradiation and the reference target location, and none of them is specifically tailored to the method for frequency modulation as set forth in the preamble.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-4, 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishigami et al. (U.S. 5,933,184) in view of Ishiguro et al. (Pub. No. U.S. 2004/0037585).

Ishigami et al., an acknowledged prior art, discloses an image forming apparatus including a frequency modulation device, which comprises a segmentalizing device for dividing, into a plurality of segments in units of pixel, a main scan line on an image bearing member scanned by a laser beam (using the marks 39A-C formed along the main scan direction and the CCD cameras 38A-C to divide the main scan line into segments or sections) (Figs. 5, 7-8) (col. 13, lines 46-61), a reference value storing device for storing a reference value (e.g., reference boundary positions) (col. 13, line 62 to col. 14, line 8), a detecting device (CCD cameras 47-1 to 47-5, Fig. 8) for detecting a difference between the reference value and an actual laser irradiation location (e.g., actual scanning positions along the main scan direction) (col. 14, lines 9-13), and a correcting device for correcting a shift in the laser irradiation location in accordance with the detection results obtained by the detecting device (col. 14, lines 14-56).

Although Ishigami et al. teaches a video clock generator (45) for directly employing an initial pre-designated period value (clock signal having an initial period of T/N generated by the reference clock 46) and variable-magnification coefficients magnification correction data as stored in the RAM 37 corresponding to the respective segments, so as to generate a video clock of different periods for the respective segments, Ishigami et al. fails to teach the auxiliary clock calculating device. video clock generator for the respective segments being based on an initial pre-designated period value and the auxiliary clock periods for the respective segments derived from the variable-magnification coefficients (claims 1, 15), and the selecting device for selecting, from among the correction coefficients stored in the storing device, a correction coefficient that corresponds to said another laser beam (claim 12).

Ishiguro et al. discloses an image forming apparatus comprising an image clock generator (23) for generating a reference image clock, a frequency modulator circuit (31) for modulating the frequency of the reference image clock to a predetermined multiple in accordance with a value stored in the register (35), while the main scanning directional magnification correction data is being read out based on a reference magnification clock equivalent to the image clock (paragraph [0009]) (Fig. 6). Ishiguro et al. further teaches a selecting device (address generating circuit 36) for selecting, from among the correction coefficients stored in the storing device, a correction coefficient that corresponds to said another laser beam (the address generating circuit 36 being used to select the correction data for the other color laser beams as stored in the

respective memories 15Y, 15M, 15C corresponding to the setting value stored in the register 35 for the black color laser beam) (paragraph [0033]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Ishigami et al. with the aforementioned teaching of Ishiguro et al. The motivation for doing so would have been set the image clock in synchronization with the inputted main scanning magnification correction data.

Ishigami et al. further teaches:

- the detecting device includes a scan distance measuring device (CCD cameras 47-1 to 47-5 along with corresponding monitors 48-1 to 48-5) (Fig. 8) for reading a reference image (e.g., reference boundary position marks between sections), and measuring a distance between target images (e.g., spotlight corresponding to the actual boundary positions between the sections as captured by the CCD cameras) that correspond to the segment in the reference image that has been read, and an error ratio calculating device for calculating an error ratio of the reference value to the obtained distance between the target images (e.g., deviation of the photographing position of the spotlight from the reference boundary position), and wherein the correcting device includes a variable-magnification coefficient changing device for, in accordance with the obtained error ratio, changing a variable-magnification coefficient of the corresponding segment (col. 13, line 46 to col. 14, line 57),

- an initial period changing device for changing the initial period value (the initial clock period T/N being changed to clock pulses with the reference period T, a shorter period and a longer period) (col. 14, lines 60-67),
- the laser beam is formed of plural laser beams (for the plural colors), and wherein the reference value storing device (RAM 37) includes a variable-magnification coefficient value generating device for holding a reference value used as a variable-magnification coefficient (e.g., magnification correction data) for one of the plural laser beams, and for employing the reference value and a correction coefficient corresponding to another laser beam to generate a value that is used as a variable-magnification coefficient for said another laser beam (Fig. 5),
- the correction coefficient for said another laser beam is held in advance (e.g., in the ROMs 40),
- a plurality of reference values are held in the holding device (the RAM 37 holds a plurality of reference values corresponding to the plural segments defining the main scan line), and from among the reference values, a reference value is selected as a variable-magnification coefficient for said another laser beam (reference value corresponding to the other laser beams being determined by the uniform velocity correction data stored in the ROMs 40 dedicated to each of the color laser beams),
- wherein the variable-magnification coefficient value generating device generates a value used as a variable-magnification coefficient for said another laser beam

by using a method for shifting the reference value to the left or right in a main scan direction by a distance equivalent to a predetermined value that corresponds to the correction coefficient (longer dots or shorter dots being formed in each of the sections of the main scan line in order to expand or contract the sections and thus shift the actual scanning positions at the boundary of the sections).

Allowable Subject Matter

8. Claims 5-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claim 5 is the inclusion therein, in combination as currently claimed, of the limitation "the detecting device separates the segments into blocks of continuous segments, and detects a shift between a laser irradiation position based on a value predesignated for each of the blocks and an actual laser irradiation position" and "in accordance with the detection results obtained by the detecting device, the correcting device controls a pixel period of the segment, and corrects the shift of the laser irradiation position", which are not found taught by the prior art of record considered alone or in combination.

Claims 6-9 are allowable because they are dependent from claim 5 above.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hai Chi Pham

HAI PHAM
PRIMARY EXAMINER
April 27, 2006